Milpower Source

SNMPv3

PC Auto Shutdown

Application for M359

User's Manual

Doc: UPS_AS_UM

Rev (-)

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1. General

1.1. Scope

This manual is relevant only for M359 UPS of Rev E or higher with Ethernet (SNMP) option.

1.2. Definitions

Application – UPS Auto Shutdown-x.x.x.exe (x.x.x is the revision)
UPS – the MPS M359 UPS that the Application will communicate with.
Shutdown Procedure- The actions that the Application will take when triggered.

1.3. Intended Application

The Application allows, in an event of a main-line power failure, a graceful and coordinated shutdown of the PC and the M359 UPS that feeds it, using a secure SMNPv3 protocol.

The Application constantly monitors the UPS status. When the UPS reports that it is operating on battery power (Main AC power failure) and its battery has discharged below a user's specified level, the Application will trigger the Shutdown Procedure that allows for a controlled shutdown of the PC and the UPS (and other- user's defined actions). The user may select what actions will be taken and the delay between them. The Application allows the user to specify a few other failure conditions (in addition to low battery) that will trigger the Shutdown Procedure.

1.4. Supported Operating Systems

The Application supports the following OS:

Windows XP (32 bit SP3)
Windows 7
Windows Server 2003
Windows Server 2008

2. Installation and Configuration

2.1. UPS Configuration

2.1.1. In order to enable the Application, the UPS must be configured to SNMPv3 protocol (not the default UPS settings).
For UPS configuration instructions refer to Milpower document: "**M359_Console_UM**". (For an alternative configuration procedure that does not require special software; refer to Milpower document: "**M359_CLI_UM**"). Both documents are available on Milpower's Website: **"www.milpower.com".**

2.1.2. The SNMPv3 Standard Security Protocol contains two Usernames and two Passwords. In order to enable the Application, the two Usernames must be identical to each other and the two Passwords must be identical to each other.

2.1.3. The Password length should be at least eight (8) characters long.

2.1.4. In order to support a UPS Shutdown by the Application, the UPS's firmware version must be 2.02.17 or higher. Refer to Milpower document "**M359_FUP_1**" (available on **www.milpower.com**) on how to upgrade the UPS firmware.

2.2. Installing the Application

2.2.1. In order to run the Application a copy of dot-Net framework revision v3.5 or higher must be installed on the PC.

2.2.2. You may need to have an Administrator privileges in order to perform the program installation.

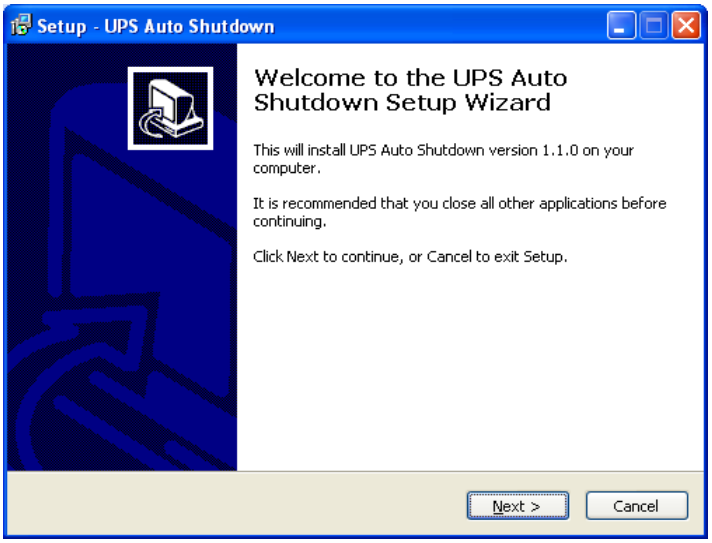
2.2.3. Run the "UPS Auto Shutdown-x.x.x.exe" setup file (x.x.x is the setup version). The setup file is available on Milpower's Website: **"www.milpower.com"**

2.2.4. If the following Security Warning appears click "Run":

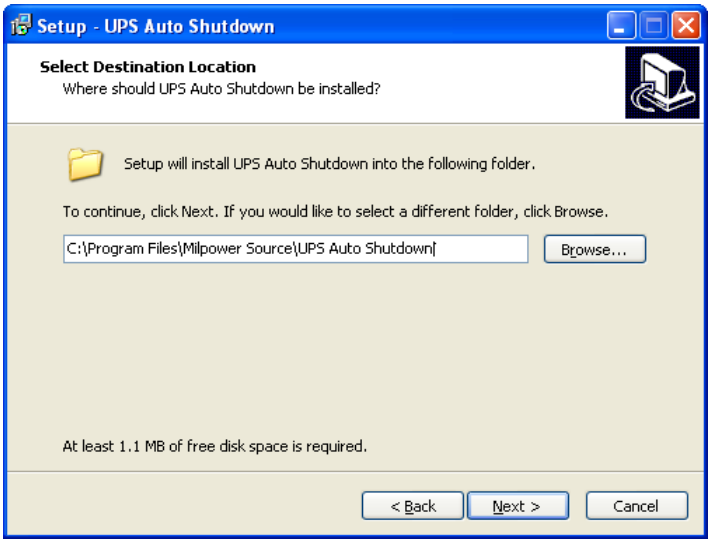
Open File - Security Warning
The publisher could not be verified. Are you sure you want to run this software?
Name: \UPS Auto Shutdown-1.1.0.exe
Publisher: Unknown Publisher
Type: Application
From: \UPS Auto Shutdown-1.1.0.exe
Run
Cancel
This file does not have a valid digital signature that verifies its publisher. You should only run software from publishers you trust.
How can I decide what software to run?

Note: *The version number that appears on this screenshot and the screenshots below is an example only. The actual displayed version number corresponds to the actual version being installed.*

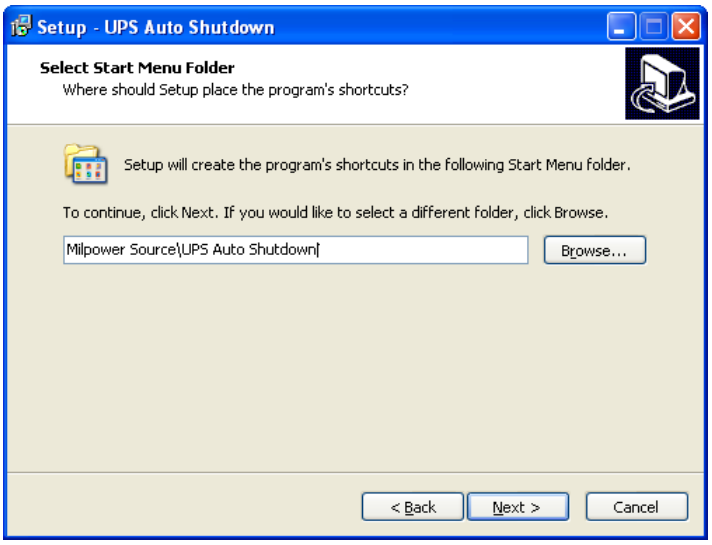
2.2.5. The Setup Application will start and displays the Welcome screen:


Setup - UPS Auto Shutdown
Welcome to the UPS Auto Shutdown Setup Wizard
This will install UPS Auto Shutdown version 1.1.0 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

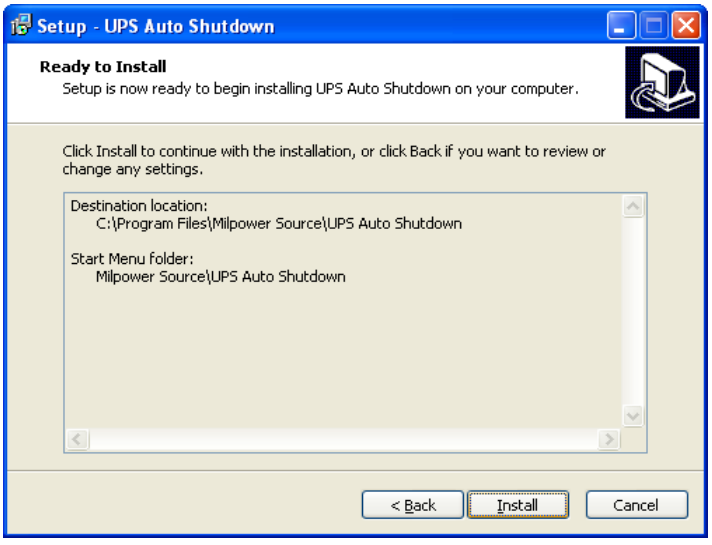
2.2.6. Click "Next" and the following screen will appear.


Setup - UPS Auto Shutdown
Select Destination Location
Where should UPS Auto Shutdown be installed?
Setup will install UPS Auto Shutdown into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Program Files\Milpower Source\UPS Auto Shutdown
Browse...
At least 1.1 MB of free disk space is required.
< Back
Next >
Cancel

2.2.7. You may change the Install destination folder and when done click "Next" and the following screen will appear.

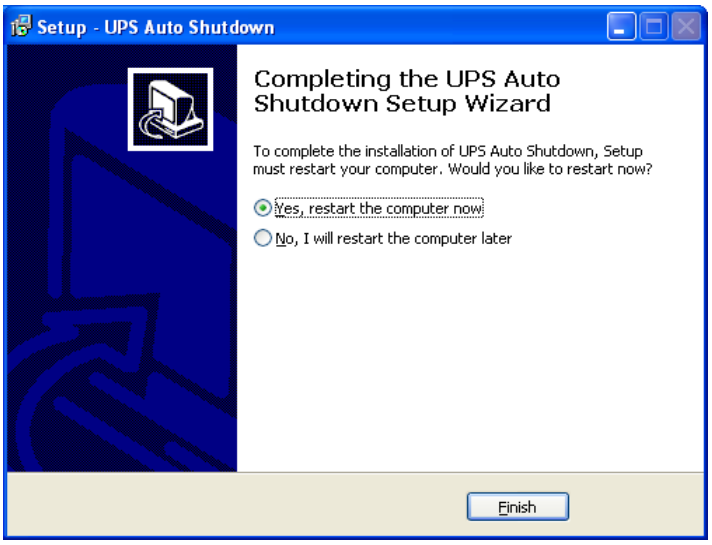

Setup - UPS Auto Shutdown
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
Milpower Source\UPS Auto Shutdown
Browse...
< Back
Next >
Cancel

2.2.8. Click "Next" and the following screen will appear.


Setup - UPS Auto Shutdown
Ready to Install
Setup is now ready to begin installing UPS Auto Shutdown on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\Program Files\Milpower Source\UPS Auto Shutdown
Start Menu folder:
Milpower Source\UPS Auto Shutdown
< Back
Install
Cancel

2.2.9. Click "Install". The Installation process will start and if everything is correct should take less than a minute to complete.

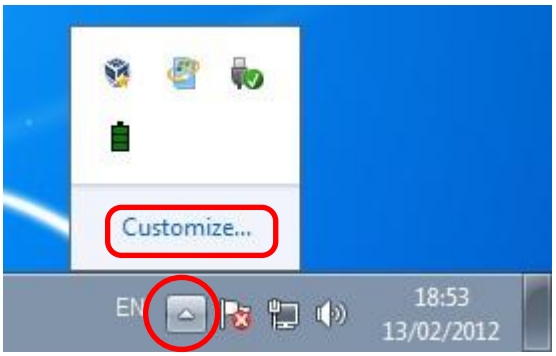
2.2.10. When the installation is completed the setup program will ask for a restart of the computer:


Setup - UPS Auto Shutdown
Completing the UPS Auto Shutdown Setup Wizard
To complete the installation of UPS Auto Shutdown, Setup must restart your computer. Would you like to restart now?
Yes, restart the computer now
No, I will restart the computer later
Finish

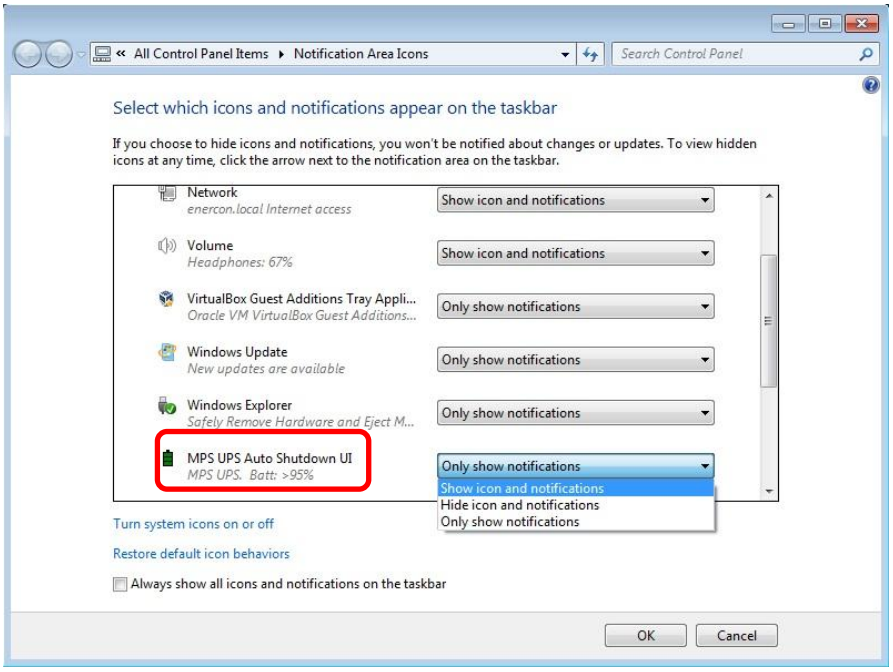
2.2.11. Save all unsaved data and click "Finish".

For Windows 7 and Windows 2008 users only:

2.2.12. After computer restarts click on the small arrow icon near the clock and then click "Customize…".



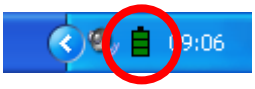
2.2.13. In the list that will open (see the screenshot below) find the "MPS UPS Auto Shutdown UI" and in the drop down box to its right select "Show icon and notifications"


All Control Panel Items ▸ Notification Area Icons
Search Control Panel
Select which icons and notifications appear on the taskbar
If you choose to hide icons and notifications, you won't be notified about changes or updates. To view hidden icons at any time, click the arrow next to the notification area on the taskbar.
Network
enercon.local Internet access
Show icon and notifications
Volume
Headphones: 67%
Show icon and notifications
VirtualBox Guest Additions Tray Appli...
Oracle VM VirtualBox Guest Additions...
Only show notifications
Windows Update
New updates are available
Only show notifications
Windows Explorer
Safely Remove Hardware and Eject M...
Only show notifications
MPS UPS Auto Shutdown UI
MPS UPS. Batt: >95%
Only show notifications
Show icon and notifications
Hide icon and notifications
Only show notifications
Turn system icons on or off
Restore default icon behaviors
Always show all icons and notifications on the taskbar
OK
Cancel

2.2.14. Click "OK"

2.3. First time Configuration

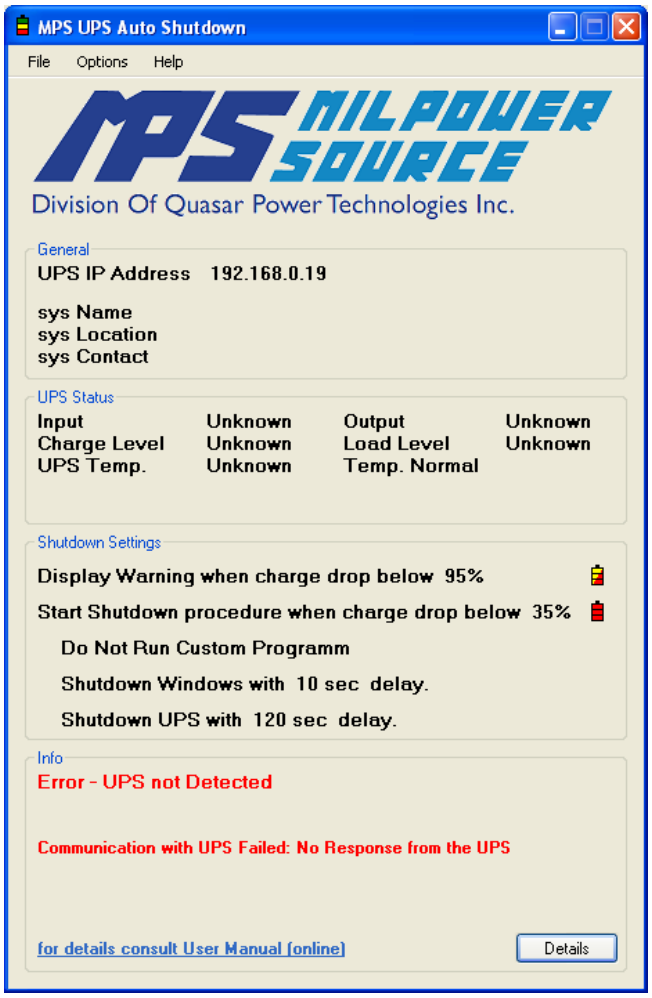
2.3.1. Once the Application is successfully installed, its icon will be displayed in the notification area of the taskbar:



The icon may look as above, or slightly different (see below) depending on the status of the UPS.

2.3.2. Right click on the icon and then click "Open" (or double click the icon).

2.3.3. The Application's Main window will be displayed:

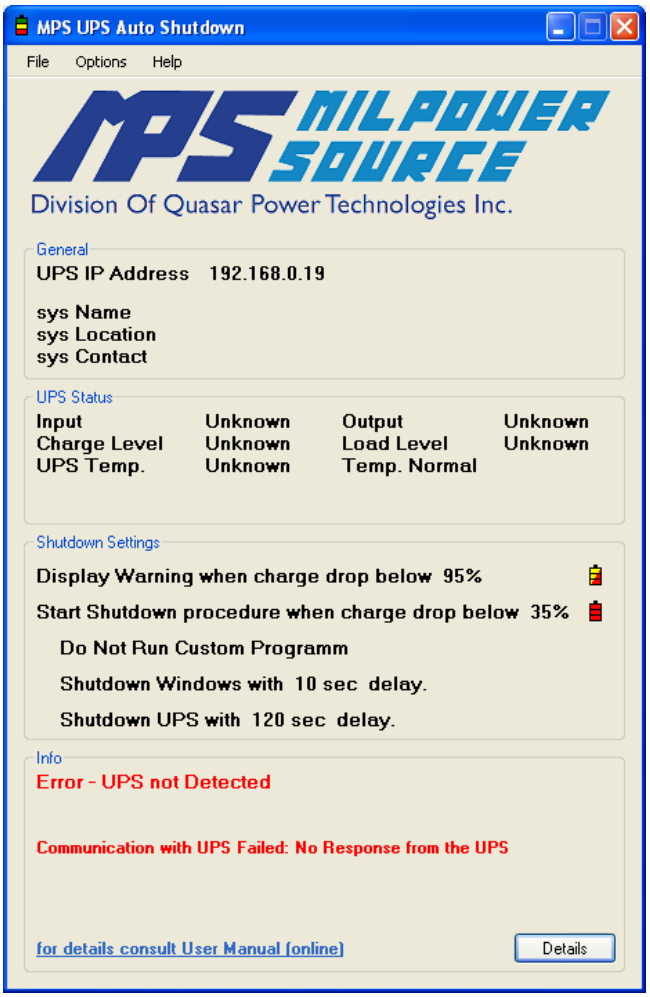


2.3.4. Follow the Application's Configuration instructions of Paragraph 3 of this document.

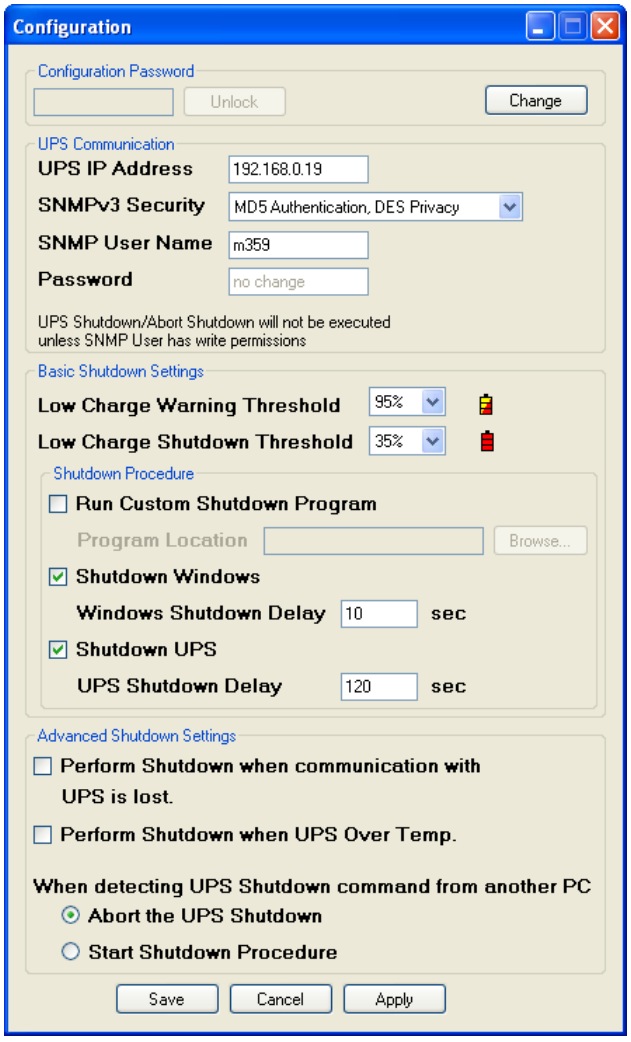
3. Application Configuration

3.1. Opening the Configuration Window

3.1.1. To change the configuration of the Application, double click the Application icon. The Application Main window (shown below) will be displayed.



3.1.2. Select "Configuration…" from the "Options" menu. The Configuration window will be displayed:



3.2. Configuration Password

3.2.1. You may set (optional) a Configuration Password that will prevent an unintentional modification of the Application's configuration. When a password is set, the entire Configuration window will be locked (disabled). In order to unlock it, the user should enter the Configuration Password and click the "Unlock" button.

Notes:

1. *The Configuration Password is a weak protection, intended only to protect the settings from unintentional corruption. It is not intended to be used as the main security measure against a malign intrusion.*

2. *Deleting (or modifying) the Application configuration file: {**CommonApplicationData }\Milpower Source\Ups Auto Shutdown\ MpsUpsServiceConfig.xml** will delete the password. Restarting the computer or the MPS UPS Service, after deleting the Configuration file, will enable the reconfiguration of all the Application's settings (including the resetting of the password).*

3. *The Configuration Password is local to each PC station. A different Password may be used on each PC station and setting or changing a Password on one PC station will not affect the Password on any other station.*

3.2.2. To change or set the Configuration Password click the "Change" button and the following screen will appear:

3.2.3. Enter the Current Password. If Password was not set yet, leave this field empty.

3.2.4. Enter the new password in the "New Password" field and repeat it in the "Confirm New Password" field. To remove the password, leave both fields empty.

3.2.5. Click "OK" to confirm the change.

3.3. Setting the UPS Communication Parameters

The following describes the settings of the Communication parameters of the Application. **These parameters must have identical values as those of the UPS that the Application will communicate with**.

In the Configuration window (see Paragraph 3.1.2) set the following parameters:

3.3.1. "**UPS IP Address**" - (the default UPS IP address is 192.168.0.19).

3.3.2. "**SNMPv3 Security**" – set the SNMPv3 security level (the default is the highest available security setting: "MD5 Authentication, DES Privacy").

3.3.3. "**SNMP User Name**" – the SNMPv3 user name (the default is "m359").

3.3.4. "**Password**" – the SNMPv3 password (the "m359" users default password is "user_RW1" -note the case). Leaving this box empty will leave the password without change. The minimum length of the password should be eight (8) characters. To change the password see note 2 below.

***Notes**:*

1. *The UPS must be configured to SNMPv3 protocol, else the Application will not be able to communicate with it.*

2. *Changing / removing / adding users and passwords can be done only by the Command Line Interface (CLI) "**M359_CLI_UM**", or the Console program "**M359_Console_UM**".(Both are available at **www.milpower.com**)*

3.4. Basic Shutdown Settings

3.4.1. "**Low Charge Warning Threshold**" – When the charge level of the UPS battery drops below this level and the UPS operates on battery power (Main AC power failure), a warning message will be displayed, informing the user that the battery charge is low and still dropping.

***Note**: To enable this warning, it should be set to a higher level than the "Low Charge Shutdown threshold" (so it will occur before the Shutdown threshold is reached).*

3.4.2. "Low Charge Shutdown Threshold" – When the charge level of the UPS battery drops below this level and the UPS is operating on battery power (Main AC power failure), the Shutdown Procedure will be triggered.

Notes:

1. *Once the Shutdown Procedure is triggered, it cannot be aborted and will be fully executed even if the Main AC power recovers.*

2. *The "Low Charge Warning Threshold" and the "Low Charge Shutdown Threshold" of the Application may have different settings than the "Low Batt Level" and "Empty Batt Level" settings of the UPS. However, if the "Empty Batt Level" threshold of the UPS is reached, **the UPS will shut down immediately** - regardless of the settings of the Application Low Charge settings. For a description of the UPS's "Low Batt Level" and "Empty Batt Level" thresholds and settings refer to "**M359_SNMP_UM**".*

3. *Do not set the "Low Charge Shutdown Threshold" too low! The remaining battery charge should be set to a level that will allow the UPS to support the PC for the duration of the "Windows Shutdown Delay" plus the actual time it will take your PC to shut down. Take into consideration that if the "Empty Batt Level" setting of the UPS is other than zero, it will further reduces the UPS holdup time.*

4. *For reliable operation it is advisable to leave at least a 25% of the battery charge as a "safety margin" (to account for battery aging, inaccuracy of the battery monitor, etc.)*

3.4.3. "**Run Custom Shutdown Program**" – Checking this box and specifying the full path to the program in the "Program Location" field (you may use the "Browse..." button to select the program), will cause the Application to execute a user's program when the Shutdown Procedure is triggered.

Notes:

1. *The Custom Program will be executed under SYSTEM user, meaning it has very high privileges.*

2. *On Windows 7 and Windows 2008 - The Custom Program will be executed in Session 0 so it can't directly interact with the user.*

3.4.4. "**Shutdown Window**" – Checking this box will cause the Application (when the Shutdown Procedure is triggered) to initiate a delayed Windows Shutdown. The delay between the triggering of the Shutdown Procedure, to Windows shutdown is specified in the "Windows Shutdown Delay" field. During this delay a shutdown dialog box will be displayed, warning the user to save their work. If you do not want the Application to shutdown Windows, uncheck the "Shutdown Windows" checkbox.

3.4.5. "**Shutdown UPS**" – Checking this box will cause the Application (when the Shutdown Procedure is triggered) to initiate a delayed UPS Shutdown. The delay between the triggering of the Shutdown Procedure, to the UPS shutdown is specified in the "UPS Shutdown Delay" field. If the PC is fed by the UPS, the "UPS Shutdown Delay" should be set such that it will be longer than the "Windows Shutdown Time" plus the time that it takes the PC to actually shutdown. If you do not want the Shutdown Procedure to shutdown the UPS, uncheck the "Shutdown UPS" checkbox.

Note:

If you check the "Shutdown the UPS" box, the SNMP User Name that you have entered must have a "Write Permission". If the SNMP User Name has a "Read Only" permission, it won't be able to shutdown the UPS.

3.5. Advanced Shutdown Settings

3.5.1. "**Perform Shutdown when communication with UPS is lost.**" – Checking this box will cause the Application to trigger the Shutdown Procedure when the communication with UPS is lost for more than 60 seconds.

3.5.2. "**Perform Shutdown when UPS Over Temp.**" – Checking this box will cause the Application to trigger the Shutdown Procedure when the UPS reports an Over Temp failure (unless the UPS is in Battle Mode).

Note:
*Unless the UPS is in a Battle Mode, an Over Temp failure will cause the UPS to shut down automatically after a three (3) minutes delay (even if the" Perform Shutdown when UPS Over Temp" is not checked. If the "Windows Shutdown Delay" that you entered, plus the actual time it takes your PC to shutdown is longer than 3 minutes, you may lose power prematurely upon Over Temp failure. If an orderly shutdown in case of an Over Temp failure is mandatory, reduce the "Windows Shutdown Delay", or if this is not possible, set the UPS to Battle Mode (see the UPS User Manual "**M359_SNMP_UM**").* ***Warning!!! Disabling the Over Temp protection of the UPS by a Battle Mode command, may result (in case of an Over Temp failure) in an irrecoverable damage to the UPS.***

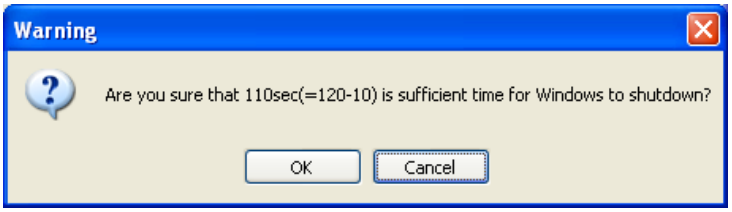
3.5.3. If the "**When detecting a Shutdown Command from Another PC**" option is checked, it allows the user to specify what action the Application should take if it detects that the UPS has received a Delayed Shutdown Command from some other source (typically another PC fed from the same UPS). The Application can be configured to "**Abort the UPS Shutdown**" or to "**Start Shutdown Procedure**" (of this station).

***Note** :*
If you chose to "Abort the UPS Shutdown" make sure that the User Name you have provided has a "Write Permission" . If it has a "Read Only" permission, it won't be able to abort the UPS shutdown – and the UPS may shutdown before the Application has managed to safely shutdown your computer.

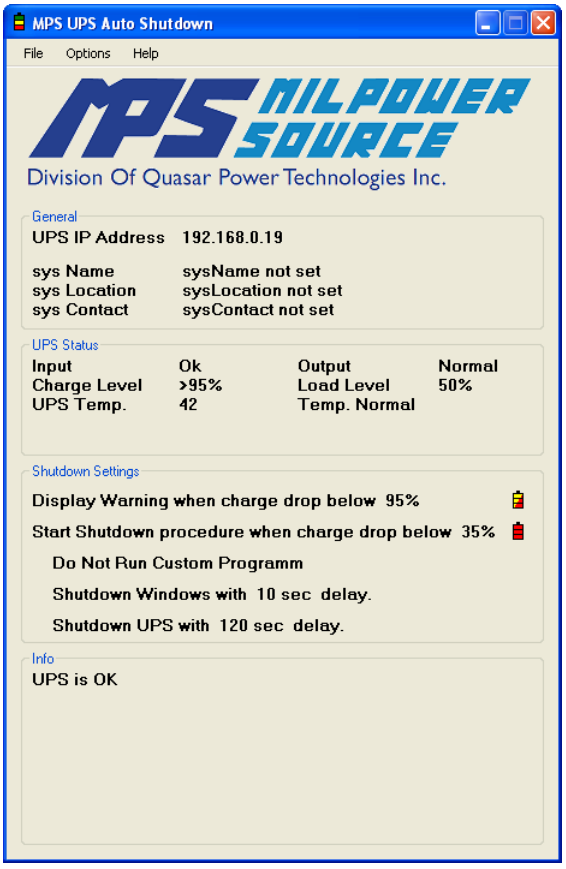
3.6. Saving the Configuration

3.6.1. Click "Save" button to commit the changes, or "Cancel" to close the window and abort the changes.

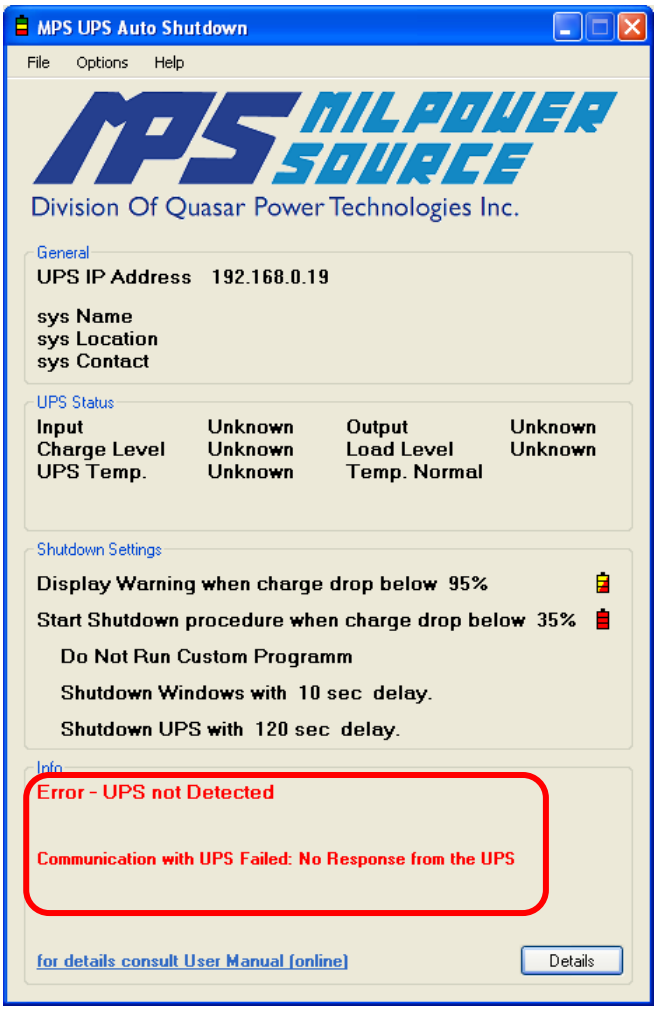
3.6.2. Before saving the changes the Application will display the time that the new settings allocates for Windows to shutdown. Make sure that that time is sufficient. If not click "Cancel" and change the shutdown timing.



3.6.3. If all of the "UPS Communication" parameters are correct the Main window will be displayed with no Communication Error messages:



3.6.4. If one of the UPS communication parameters is incorrect then an Error Message will be displayed in the Application Main window:



4. Application Operation – Simple Shutdown Procedure

4.1. Starting the Application

The Application starts automatically when Windows starts.

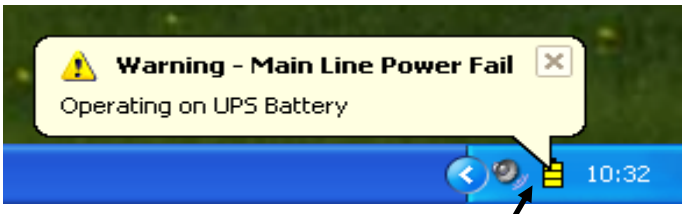
4.2. During Normal Conditions

The Application constantly monitors the UPS status via the Ethernet connection and a battery icon, in the notification area of the taskbar, shows the status of the UPS. Pointing with the mouse on the icon (without clicking) will display a Popup message with a short description of the current status. Double clicking on the icon will show the Application Main window with a detailed description of the UPS status and the program configuration. As long as the Main AC power to the UPS is OK and the battery charge is above the "Low Charge Shutdown Threshold" the battery icon will be solid Green.

Green battery icon

4.3. When AC Input Power to the UPS Fails

When the Main AC power that feeds the UPS fails, the battery icon in the notification area will change to Yellow and a message balloon will inform the user about the event.

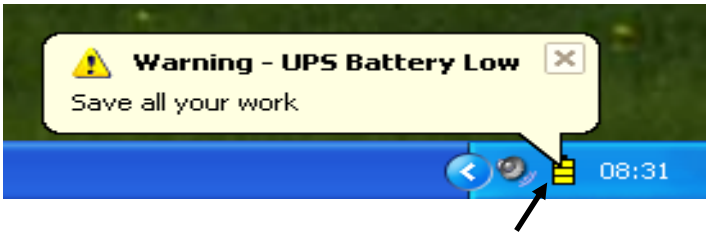


Yellow battery icon

When (and if) the Main AC power recovers, the battery icon will change back to green.

4.4. When the Battery Charge is Low

When there is a Main AC power failure and the charge in the battery of the UPS is below the "Low Charge Warning Threshold", the battery icon will blink Red/Yellow and a message balloon will inform the user that the battery is low and advise them to save their work.

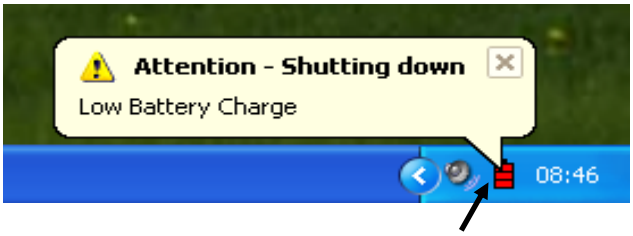


Red/Yellow blinking battery icon

When (and if) the Main AC power recovers, the battery icon will change back to Green.

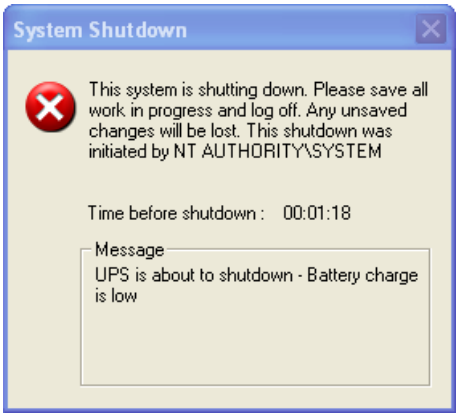
4.5. When the Battery Charge Drops Below Shutdown Threshold

When there is a Main AC power failure and the remaining charge in the battery of the UPS is below the "Low Charge Shutdown Threshold" the Shutdown Procedure will be triggered. The battery icon will change to Red and a message balloon will inform the user that Shutdown is in progress. **Once this event is triggered it will not abort even if the Main AC power has recovered.**

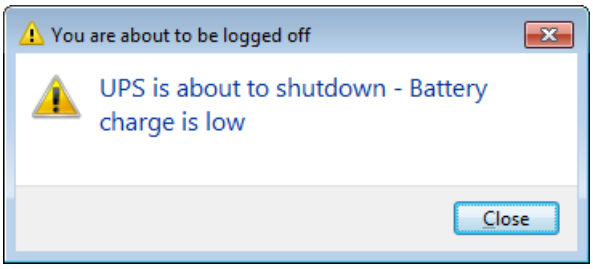


Red battery icon

If a Custom Shutdown Program was specified; it will be executed.
If a Delayed Windows Shutdown was specified, the delay timer will start running and a shutdown dialog box will appear, giving the user a last chance to save their work:


System Shutdown
This system is shutting down. Please save all work in progress and log off. Any unsaved changes will be lost. This shutdown was initiated by NT AUTHORITY\SYSTEM
Time before shutdown : 00:01:18
Message
UPS is about to shutdown - Battery charge is low

Windows XP shutdown dialog box

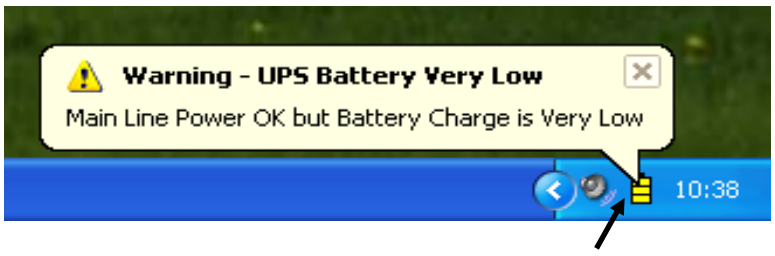


Windows 7 shutdown dialog box

Upon the triggering of the Shutdown Procedure the Application sends a delayed shutdown command to the UPS, commanding it to shut down after the specified "UPS Shutdown Delay" that was entered during the Application's configuration. The delay timer starts upon the triggering of the Shutdown Procedure. Each of the above actions will be executed only if enabled during the configuration of the Application. Disabling both the Windows Shutdown and UPS Shutdown may be useful (with or without specifying a Custom Shutdown Program) when the PC isn't fed by the UPS but the user wishes to constantly monitor the UPS status and to take a specific actions, other than shutting down its PC or the UPS. (See the example: "Monitor Only Mode", Paragraph 5.1).

4.6. Main AC power is OK but Battery is Low

If the Main AC power to the UPS is OK but the battery charge is below the "Low Charge Shutdown Threshold"; the battery icon will be Yellow and a message balloon will inform the user about the situation.



Yellow battery icon

Please note that in this situation the available battery charge may be too low and in case of a Main AC power failure the UPS may shutdown prematurely before the Shutdown Procedure is able to safely shut down the PC.

5. Configuration Examples

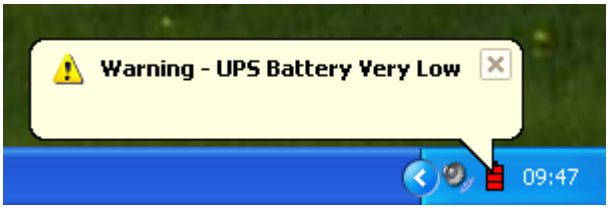
5.1. Monitor Only Mode

It is possible to configure the Application to monitor the status of the UPS without taking any action (i.e. without shutting down Windows or the UPS). This mode of operation may be useful when there is a need to remotely monitor the status of the UPS.

5.1.1. To configure the Application to this mode open the Configuration window.

5.1.2. Configure the "UPS Communication" parameters as described in Paragraph 3.3 – “Setting the UPS Communication Parameters”.

5.1.3. Set "Low Charge Warning Threshold" and "Low Charge Shutdown Threshold" as desired. Note that in Monitor only Mode, the "Low Charge Shutdown Threshold" will only warn the user about the battery status but will not cause an actual shutdown:

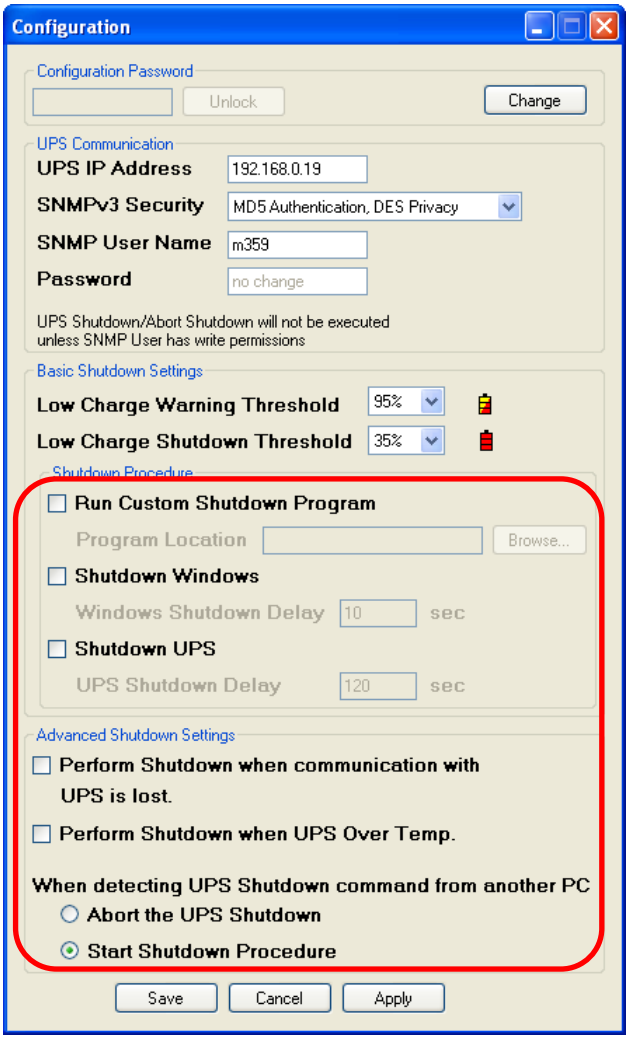


5.1.4. Uncheck the followings:

- Run Custom Shutdown Program.
- Shutdown Windows.
- Shutdown UPS.
- Perform Shutdown when communication with UPS is lost.
- Perform Shutdown when UPS Over Temp.

5.1.5. Select "Start Shutdown Procedure" under "When detecting UPS Shutdown command from another PC".

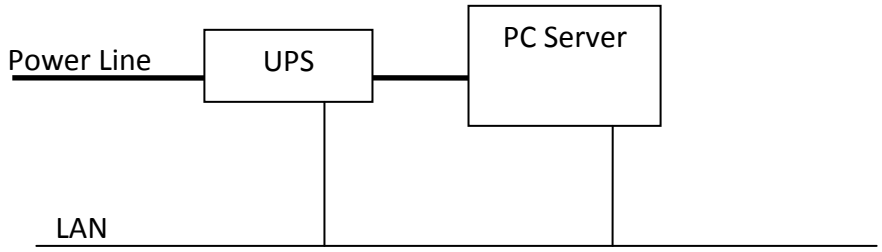
5.1.6. The Configuration window will look as shown below:



5.1.7. Click the "Save" button.

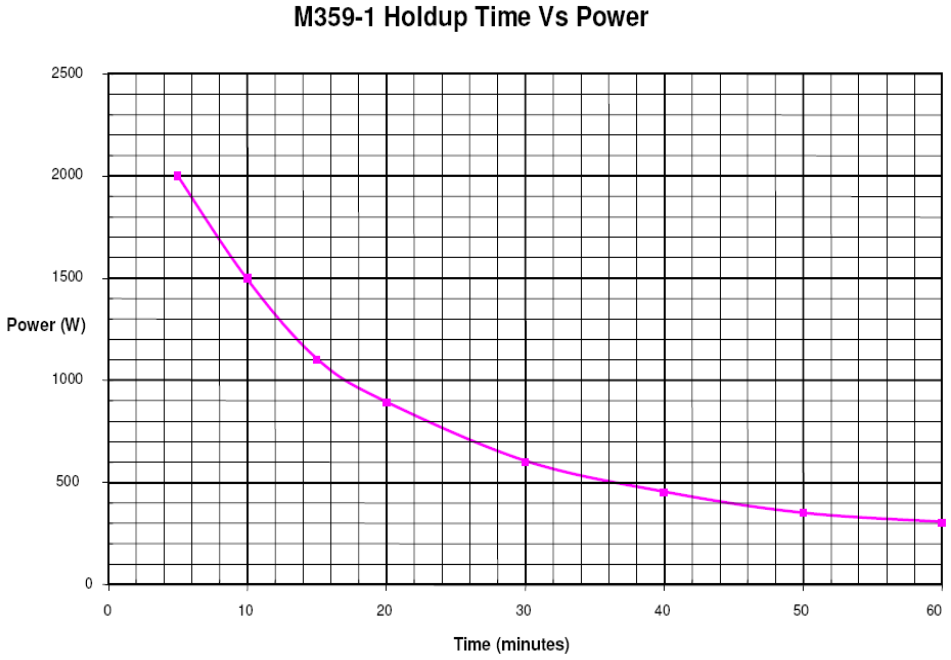
5.2. A Single PC System

In this example the PC is a Server station fed by an M359-1 UPS. The specific Server in this example consumes 500W (including all auxiliary equipment that is fed by the UPS; like screen, printer, communication (LAN) hardware, etc.) and takes 2 minutes to shut down in an orderly fashion. We will assume that the system in this example requires an early warning of about 5 minutes before actual shutdown is initiated.



5.2.1. Calculating the Required Battery Thresholds.

From the "M359-1 Holdup Time Vs Power" plot, the M359-1 can support a 500W load for 35 minutes.



Assuming that the “Low Charge Warning” will be a sufficient visual warning and a no additional warning will is required before Shutdown; we will set the “Windows Shutdown Delay" to its minimum i.e. 10 sec.
It means that we should set the "Low Charge Shutdown Threshold" such that it will ensure 2 minutes (the actual shut down time of the server) plus 10 second (the “Windows Shutdown Delay” that we will enter) of battery operation at 500W (the Server consumption).

Leaving 25% of the theoretical 100% charge of the battery as a “safety margin” (to account for battery aging, inaccuracy of the battery monitor, etc,) we will set the “Low Charge Shutdown Threshold” to 35%:

(2.15/35) x 100% + 25%= 31% => 35%.

The 2.15 above is the 2 minutes plus 10 seconds that the battery must be able to provide in order to ensure safe shutdown. The 35 is the holdup time that the battery can support at 500W loading (from the “M359-1 Holdup Time Vs Power” plot) and the 25% is the safety margin.

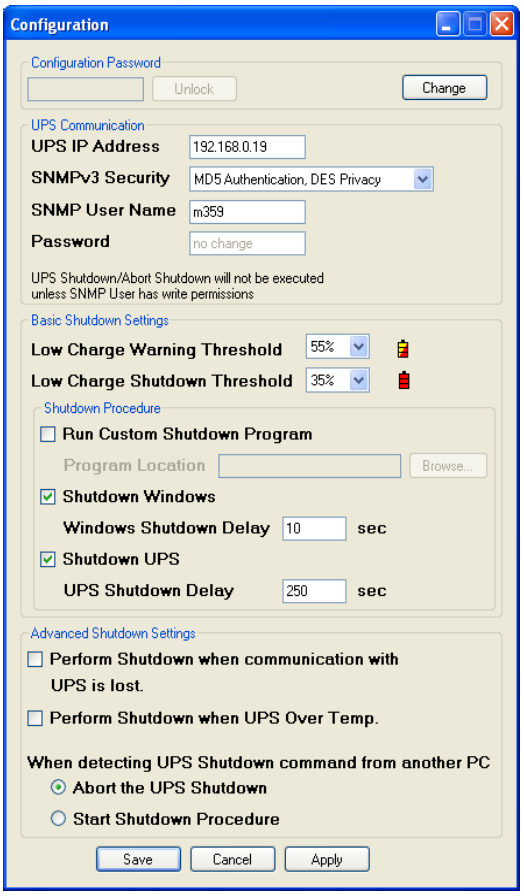
5.2.2. In order to provide a 5 minutes early warning, the "Low Charge Warning Threshold" will have to set at 14% above the Shutdown threshold:

(5/35) x 100% = 14%

We will set the "Low Charge Warning Threshold" to 35% +14% = 49% =>55% (The Charge Levels can be entered only as odd number multiplication of 5%).

5.2.3. In order to maximize the battery life we will want to shut down the UPS as soon as the Server has safely shut down, before the battery is fully depleted (deep discharge cycles reduce battery life). Since the server will be off within 2 minutes and 10 seconds after the Shutdown Procedure is triggered (130 seconds), we will check the “UPS Shutdown” box and enter 250 seconds (130 plus 120 seconds margin) in the “UPS Shutdown Delay” box. (The 120 second margin have minimal affect on the batteries charge since once the Server has shut down, the load on the UPS in our example will be negligible).

5.2.4. The Configuration window will look as shown below:



***Example note**: When the battery is fully charged, the Server will be able to "ride-through" Main AC power loss for up to 22.7 minutes (65% of 35 minutes) before the battery will reach the 35% "Low Battery Shutdown Threshold" that we have specified.*

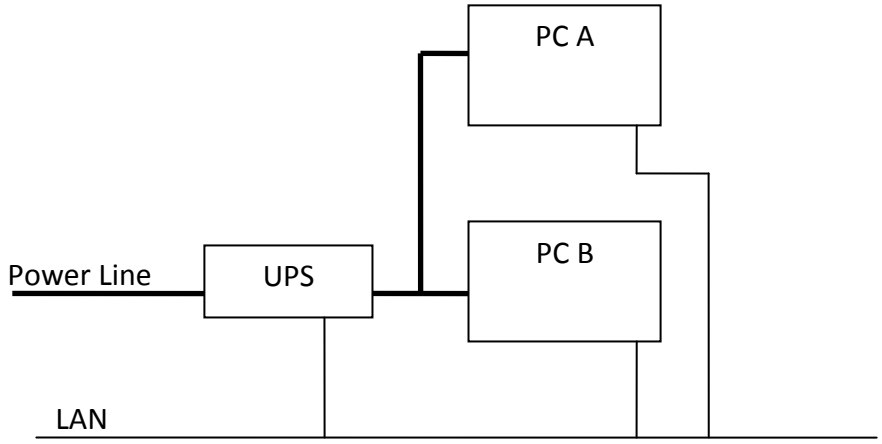
.

5.3. A Two PC System

There may be a situation when a number of PC stations are supported by a single UPS. Moreover it may be required to shut down some none-critical stations (in order to save battery energy) while allowing the critical one to keep operating.

For example let's consider two stations: PC-A and PC-B, supported by single M359-1 UPS. PC-A in our example is a critical server that consumes 1,000W (including all its peripherals) and takes 3 minutes to safely shutdown. We are required to maximize its "ride-through" time (the longest duration of AC Main power failure that it can tolerates without interruption).

PC-B in our example is a non-critical 500W PC that we want to run uninterrupted during short fluctuations (shorter than 30 seconds) of the AC Main power, but we can tolerate its shutdown during long power failures. PC-B of this example takes 2 minutes to shut down and its operator will need an advanced 2 minute warning to save their work.



5.3.1. Calculating the Required Battery Thresholds for PC-B

5.3.1.1. In order to allow 30 seconds of uninterrupted operation of PC-B, its "Low Charge Warning Threshold" needs to be:

$$100\% - 100\% \times (0.5/10) = 95\%$$

When "0.5" is the 30 seconds uninterrupted operating time of PC-A when both PC-A and PC-B are operating and consuming 1,500W. The "10" is the 10 minutes that 100% charge can support 1,500W (from the "M359-1

Holdup Time Vs Power" plot).

5.3.1.2. In order to allow for the 2 minutes that the operator will need to save their work, we will need additional charge of:

100% x (2/10) = 20%.

So the "Low Charge Shutdown Threshold" will be set to 75% (95% from 5.3.1.1 less the above 20%).

5.3.2. Calculating the Required Battery Thresholds for PC-A

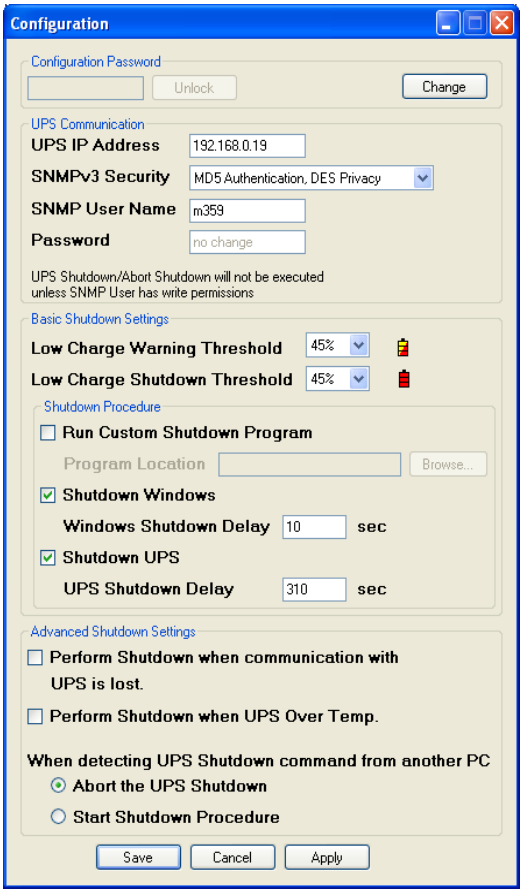
5.3.2.1. Since it takes PC-A 3 minutes to shutdown (and assuming that 10 seconds delay between reaching its "Low Charge Shutdown Threshold" to the actual initiation of the Shutdown Procedure will be sufficient), the charge that PC-A will consume from the time when its "Low Charge Shutdown Threshold" is reached, until it is off will be:

100% x (3.15/17) = 18.5% =>20%.

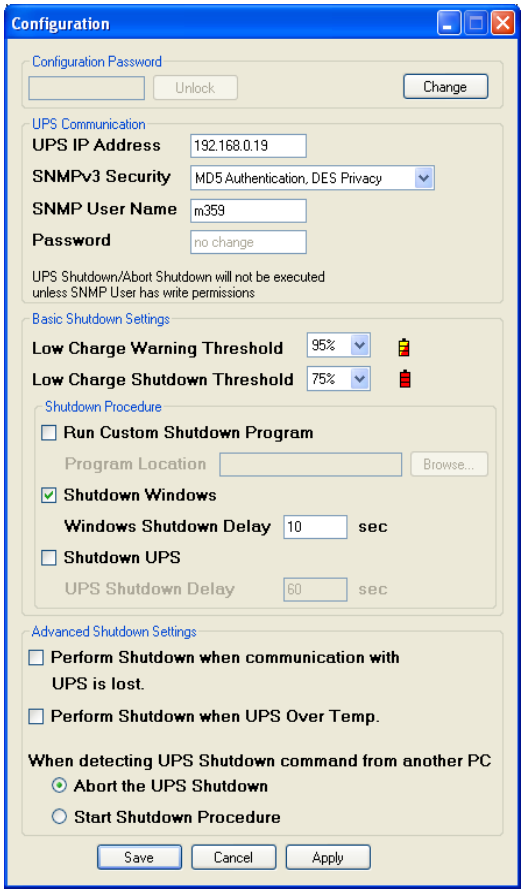
When "3.15" is the 3 minutes and 10 second operation of PC-A, "17" is the 100% holdup time for 1,000W (from the "M359-1 Holdup Time Vs Power" plot).

In order to leave 25% charge as a safety margin, the "Low Charge Shutdown Threshold" of PC-A should be at least 45% (25% + 20%). Since we want PC-A to operate uninterrupted for the longest possible time (but still ensure safe shutdown), we will set the "Low Charge Shutdown Threshold" of PC-A to the minimum safe value that we have calculated (45%). No early warning is required for PC-A, so we will set it to the same level as the "Low Charge Shutdown Threshold".

The two Configuration windows will look as shown below:



Station A Configuration



Station B Configuration

***Example notes**:*

The configurations settings shown in the example will result in the following behavior:

During a short (less than 30 seconds) interrupt on the AC Main power; both PC-A and PC-B will continue to operate undisturbed.

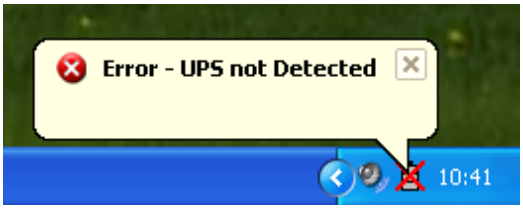
If an interrupt is longer than 30 seconds, a "Low charge Warning" will appear on the screen of PC-B, warning the operator that the battery charge is low and they should save their work. If the AC failure persists, 2 minutes after the warning PC-B Shutdown Procedure will start, and 2 minutes later PC-B will be off.

The above means that 4.5 minutes after power failure PC-B will be off and the remaining battery charge will be 55%. From this point on only PC-A is operational.

If the AC Main power recovers after 4.5 minutes since it failed then PC-A will remain ON while PC-B is OFF. The operator will have to manually turn on PC-B (after the battery has sufficiently charged to allow for another safe shutdown)

Communication Problems

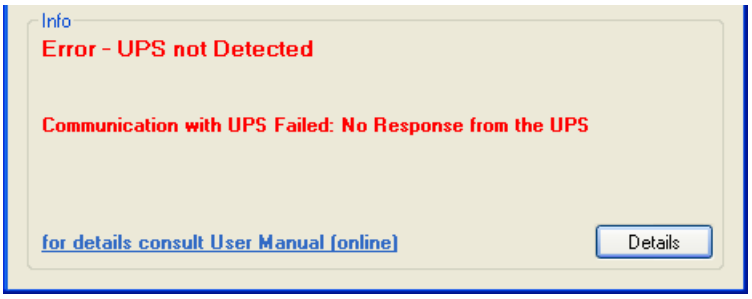
If the Application is unable to communicate with the UPS, the notification icon will change to a “Red X’ed” battery icon and a message balloon will inform the user about the event.

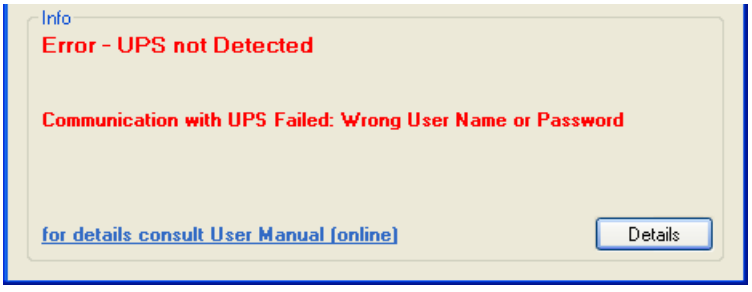


A few possible reasons for this problem may be:

- The UPS is not On.
- The UPS or the PC (or both) are not connected to the network.
- The UPS is not configured to SNMPv3 mode.
- The SNMP User Name or Password is incorrect.
- The user's SNMPv3 security level doesn’t match the UPS configuration.

The Application Main window "Info" section may provide a helpful hint about the error:


Info
Error - UPS not Detected
Communication with UPS Failed: No Response from the UPS
for details consult User Manual [online]
Details


Info
Error - UPS not Detected
Communication with UPS Failed: Wrong User Name or Password
for details consult User Manual [online]
Details

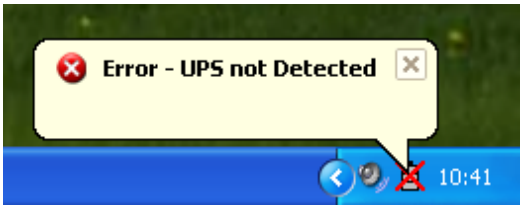
Clicking the "Details" button may display more detailed debug information, but typically it is of a limited scope.

6. Application Operation - Advanced

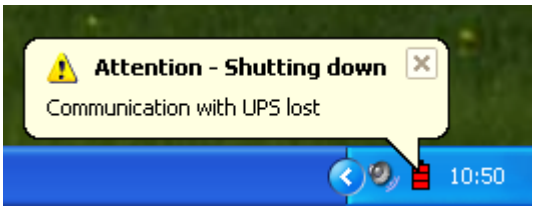
6.1. Shutdown when Communication is Lost

If configured, the Application may perform a shutdown procedure when communication with the UPS is lost. The Application will not perform the shutdown if there was no communication with UPS in the first place thus preventing the PC from shutting down immediately after it has just turned on (when there is no UPS connected).

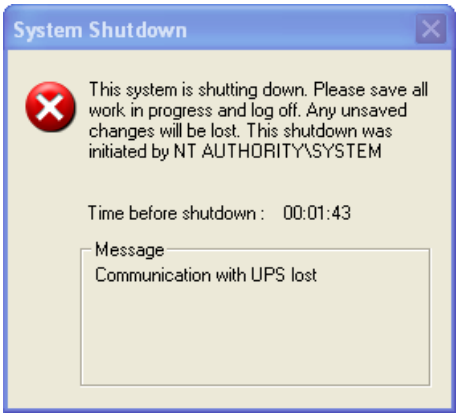
If the Application can't communicate with the UPS the notification icon will change to "Red X'ed" battery and a message balloon will inform the user about the event.



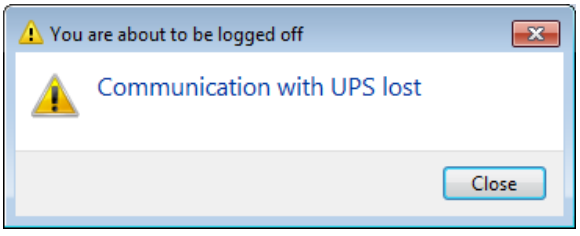
After 60 seconds of no communication the Shutdown Procedure will begin. The battery icon will change to Red and a message balloon will inform the user about the imminent shutdown.



The resulting shutdown window will look like this:


System Shutdown
This system is shutting down. Please save all work in progress and log off. Any unsaved changes will be lost. This shutdown was initiated by NT AUTHORITY\SYSTEM
Time before shutdown : 00:01:43
Message
Communication with UPS lost

Windows XP shutdown dialog box



Windows 7 shutdown dialog box

6.2. Over Temperature Shutdown

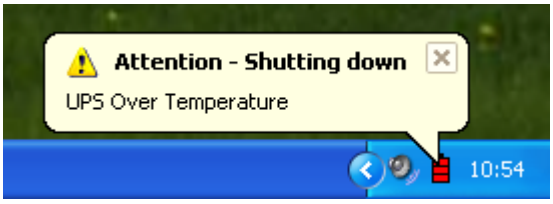
If configured, the Application may trigger the Shutdown Procedure when the UPS is about to shut down by its Over Temperature protection.

Notes:

1. *An Over Temperature failure is a rare event, triggered by a combination of abnormal conditions such as above spec ambient temperature, a prolong overload, a blocked cooling air path, a failed cooling fan, etc. The Over Temp threshold is set sufficiently high such that it eliminates false trips, but once it does trip, in order to prevent irreversible damage, the UPS will shut itself off within 3 minutes.*

2. *If the system cannot tolerate an un-orderly shutdown even in the unlikely event of an Over temp failure, then the settings of "Windows Shutdown Delay" + the time it actually takes your PC to shutdown should be shorter than 3 minutes. If this is impossible, you may need to disable the Over Temp protection by driving the UPS to Battle Mode (see the UPS User Manual "**M359_SNMP_UM**"). But caution!!! When the in Battle Mode, an Over Temp failure may result in an irreversible damage to the UPS!!!*

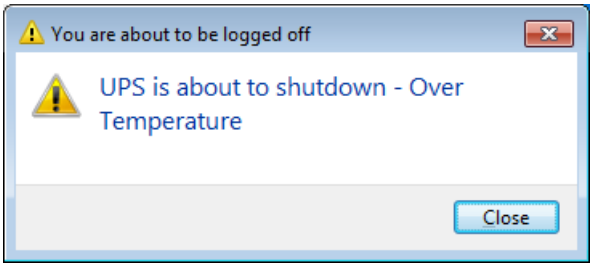
If the Application detects that the UPS is about to shutdown due to an Over Temperature (and the Over Temperature Shutdown is enabled), the battery icon will change to Red and a message balloon will inform the user about the imminent shutdown:



And the following Windows shutdown window will be displayed:

System Shutdown
This system is shutting down. Please save all work in progress and log off. Any unsaved changes will be lost. This shutdown was initiated by NT AUTHORITY\SYSTEM
Time before shutdown : 00:01:44
Message
UPS is about to shutdown - Over Temperature

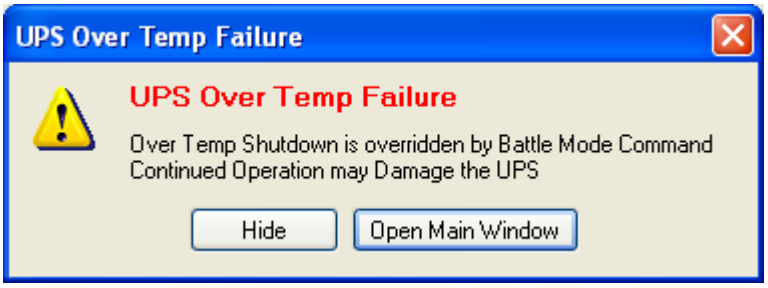
Windows XP shutdown dialog box



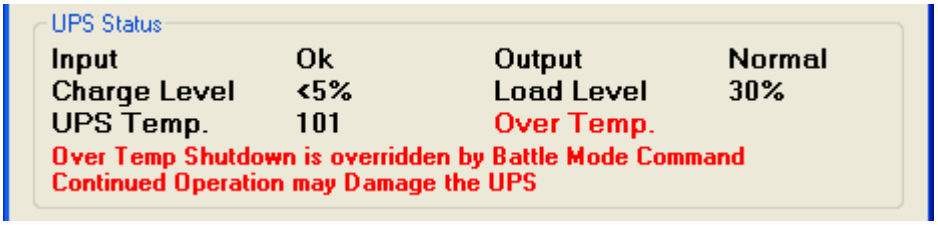
Windows 7 shutdown dialog box

If the UPS was driven by the user into Battle Mode, the Over Temperature Shutdown will not start since Battle Mode command disables the Over Temp protection.

In this case the Application will display the following message:

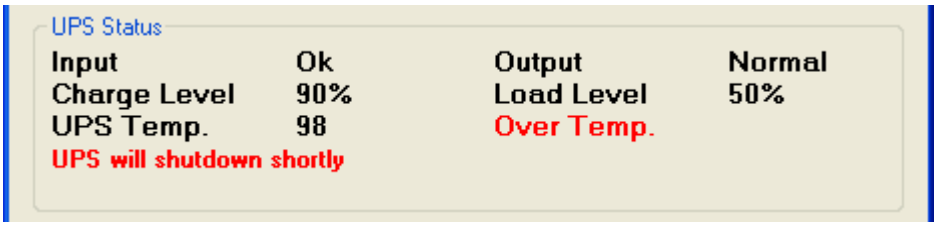

UPS Over Temp Failure
UPS Over Temp Failure
Over Temp Shutdown is overridden by Battle Mode Command
Continued Operation may Damage the UPS
Hide
Open Main Window

The "UPS Status" section in the Main Application window will inform the user about the situation as well:



If the Over Temperature failure occurs and the UPS Over Temperature Shutdown is not enabled the Application will display the following message.

The "UPS Status" section in the Main Application window will inform the user about the situation as well:



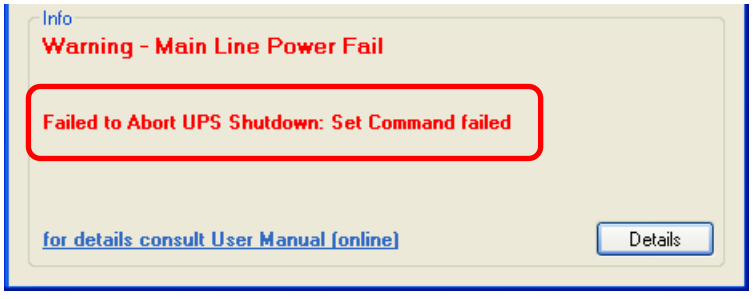
6.3. UPS Shutdown by Another PC

This scenario is relevant only if there is more than one PC station connected to the same UPS. It is possible to specify what action the Application should take if it detects that the UPS has received a Delayed Shutdown Command from some other source.

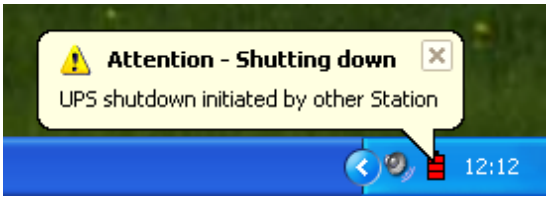
If the Application is set to Abort UPS Shutdown initiated by other sources, then upon detecting that a Delayed Shutdown command from another source was received by the UPS, it will immediately send a ShutdownCountAbort command that will rest the Shutdown Delay counter and void the Delayed Shutdown command.

If the Abort command cannot be executed (due to read-only SNMP user permissions) then the blinking exclamation mark will be displayed near the notification icon:

The Application Main window "Info" area will provide a detailed description of the error:


Info
Warning - Main Line Power Fail
Failed to Abort UPS Shutdown: Set Command failed
for details consult User Manual (online)
Details

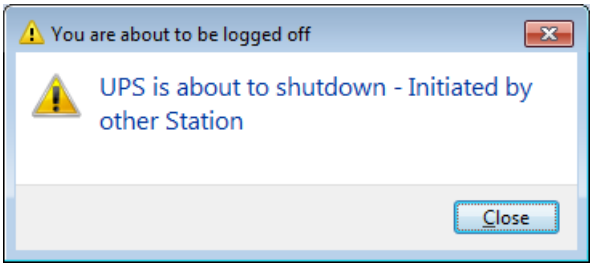
If the Application is set to start its own Shutdown Procedure (when it detects that some other PC has sent a Delayed Shutdown Command to the UPS) then the Shutdown Procedure will be executed immediately upon the detection of the Shutdown command by the other computer. (The actual shutdown of windows will start only after the specified “Windows Shutdown Delay".)



In this case the following Windows shutdown window will be displayed:

System Shutdown
This system is shutting down. Please save all work in progress and log off. Any unsaved changes will be lost. This shutdown was initiated by NT AUTHORITY\SYSTEM
Time before shutdown : 00:01:46
Message
UPS is about to shutdown - Initiated by other Station

Windows XP shutdown dialog box



Windows 7 shutdown dialog box

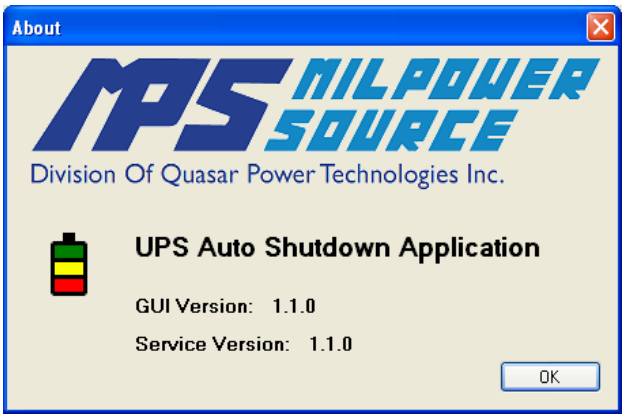
***Note**: if an Application running on one PC is not configured to shut down the UPS (the "Shutdown UPS" option isn't checked), but the Application running on another PC is configured to shut down the UPS, the UPS may shut down too soon for the first PC.*

If the UPS receives a Shutdown Command from a PC station and then receives (before it actually shuts down) another Shutdown Command from another PC station, the UPS will obey the one that is scheduled to be executed last.

6.4. Checking the Application Version

6.4.1. To check the Application Version, double click the Application icon. The Application Main window will be displayed.

6.4.2. Select "About" from the "Help" menu. The About window will be displayed:



Note: *The versions numbers that appear on this screenshot are an example only. The displayed version numbers will reflect the actual installed versions of the Application.*

7. Advanced issues

7.1. Security

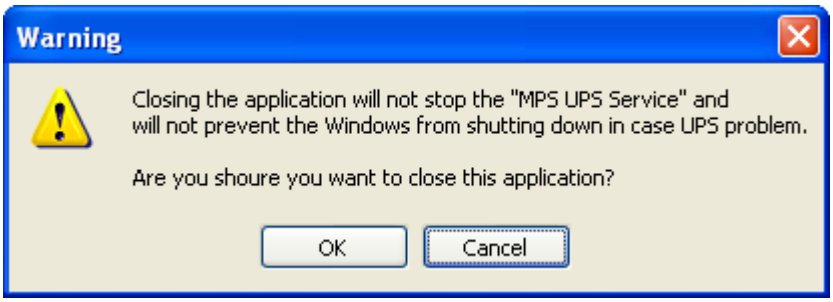
7.1.1. The communication between the Application Service and the Application User Interface is done through Windows “Named Pipe”. This technology restricts the communication to single computer and prevents any communication from any other machine.

7.1.2. The SNMPv3 password that the user enters during the configuration setting is held by the Application service. The Application provides no interface to retrieve the password.

7.1.3. The password is encrypted and saved in the Application Configuration file. Please note that if a malignant attacker manages to access the Configuration file they will be able to extract the password from it.

7.2. Shutting down the Application

7.2.1. Shutting down the Application, by right clicking on its Icon and choosing "Exit" will **not** stop the Application service and it will **not** prevent the PC from shutting down when Power is lost. The Application will inform the user about this issue when they try to close the Application:

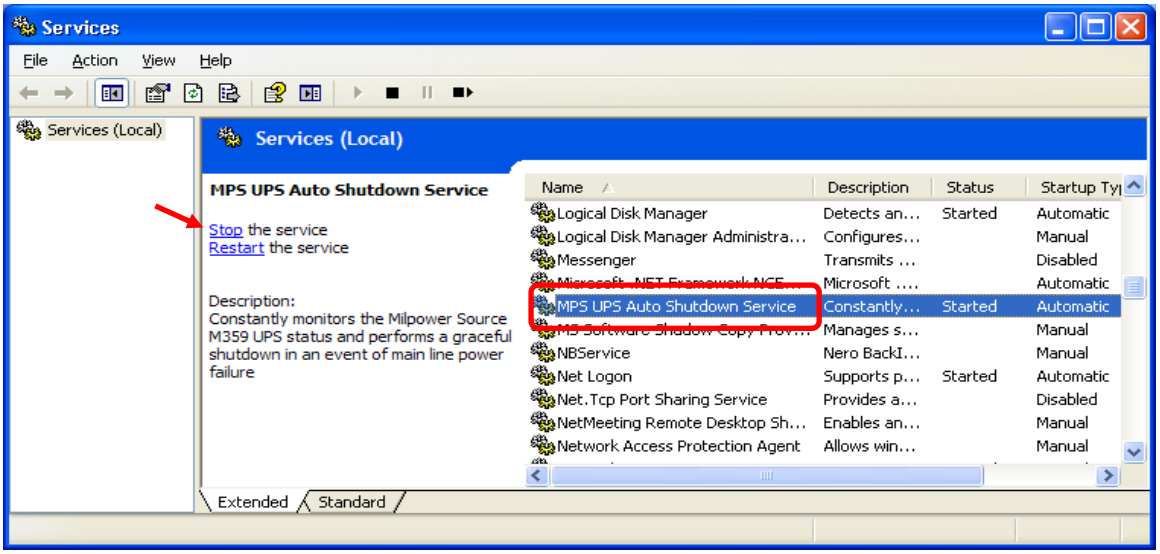

Warning
Closing the application will not stop the "MPS UPS Service" and
will not prevent the Windows from shutting down in case UPS problem.
Are you shoure you want to close this application?
OK
Cancel

In order to temporary stop the Application from operating, the Application Service should be stopped. To do so the User must have Administrator privileges.

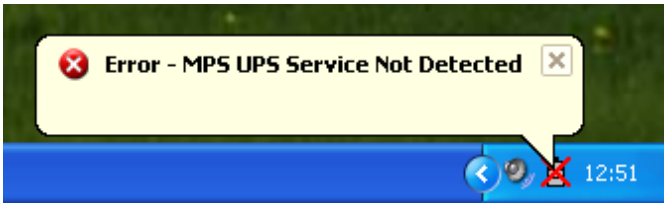
7.2.2. On Windows XP/2003: Click "Start" and then "Run".
On Windows 7/2008: Click Start button and then click the search box.

7.2.3. Type "services.msc" and press Enter.

7.2.4. Locate "MPS UPS Auto Shutdown Service" in the list and click "Stop":



When the Application Service is stopped the battery icon in the notification area will change to "Red X'ed" and a message balloon will inform the user about the situation.



7.2.5. To restart the Service, locate it in the Services list and click "Start". (Restarting Windows will automatically start the Service).

7.3. General Notes

7.3.1. When there are no communication problems the Application reads the UPS status once a second. The overall delay between actual change in the UPS status and the time it is displayed on the Application interface is about 3 sec.

7.3.2. If the Shutdown Procedure has started and if a specific shutdown operation cannot be executed (for example the Application cannot shutdown the UPS due to Read Only user permissions) the Application will keep trying to perform that action.

7.3.3. Once a Shutdown Procedure has started, it will not be aborted, even if input power is restored. Regardless, 30 minutes after the triggering of the Shutdown Procedure (if AC Main power is present and the PC hasn't shut down for any reason) the Application will reset and go back to normal operation.

7.3.4. After Shutdown Procedure has started, the User may force the Application to go back to normal operation mode by selecting "Goto Normal" from "Options" menu. If upon selecting the "Goto Normal" the shutdown conditions are still existing, the Application will immediately retrigger the Shutdown Procedure. Please note that the command "Goto Normal" resets the Application to normal mode, but does not affect any process that is already running external to the Application (like a delayed Windows shutdown, delayed UPS shutdown, etc).